

**A systematic review and meta-analysis of prevalence of protein-energy malnutrition in the international community: A look at the influence of region, rurality, setting and gender (the macro study)**

Crichton, Megan; Craven, Dana L.; Mackay, Hannah; Marx, Wolfgang; Marshall, Skye

*Published in:*  
Nutrition and Dietetics

*DOI:*  
[10.1111/1747-0080.12426](https://doi.org/10.1111/1747-0080.12426)

*Licence:*  
Free to read

[Link to output in Bond University research repository.](#)

*Recommended citation(APA):*  
Crichton, M., Craven, D. L., Mackay, H., Marx, W., & Marshall, S. (2018). A systematic review and meta-analysis of prevalence of protein-energy malnutrition in the international community: A look at the influence of region, rurality, setting and gender (the macro study). *Nutrition and Dietetics*, 75(S1), 35-36.  
<https://doi.org/10.1111/1747-0080.12426>

**General rights**

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

For more information, or if you believe that this document breaches copyright, please contact the Bond University research repository coordinator.

# Protein-Energy Malnutrition

A systematic review and meta-analysis of prevalence of protein-energy malnutrition in the international community: A look at the influence of region, rurality, setting and gender (The MACRo Study).

Dr Skye Marshall

BNutr&Diet(Hons1), PhD, APD, AN

[skye\\_marshall@bond.edu.au](mailto:skye_marshall@bond.edu.au)

*Under review at Age & Ageing*



Megan  
Crichton  
**Bond  
University**



Dr Dana  
Craven  
**JB**



Hannah  
Mackay  
**Mater  
Hospital**



Dr Marian de  
van der  
Schueren  
**VA Medical  
Centre  
Amsterdam**

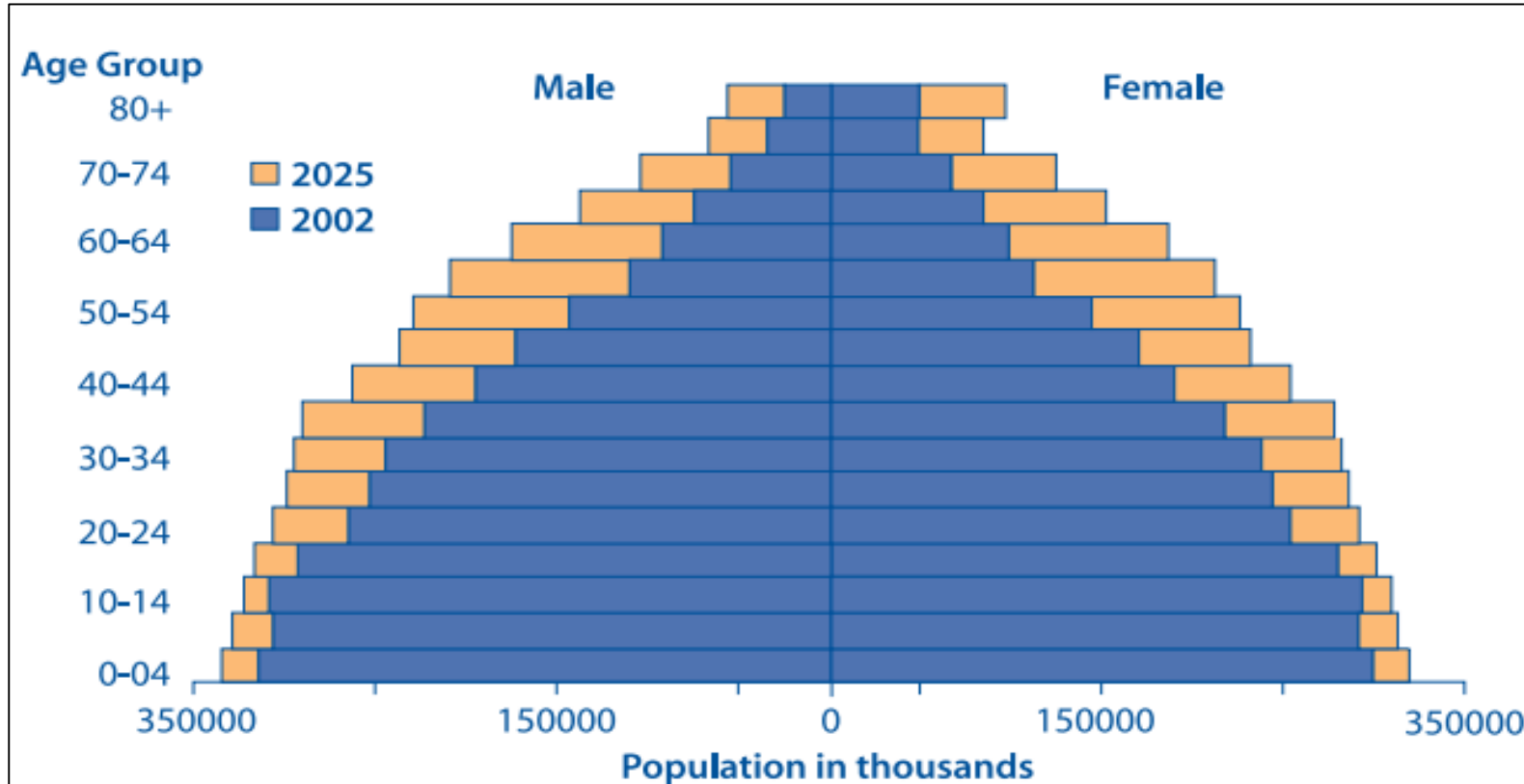


Dr Wolfgang  
Marx  
**Deakin  
University**



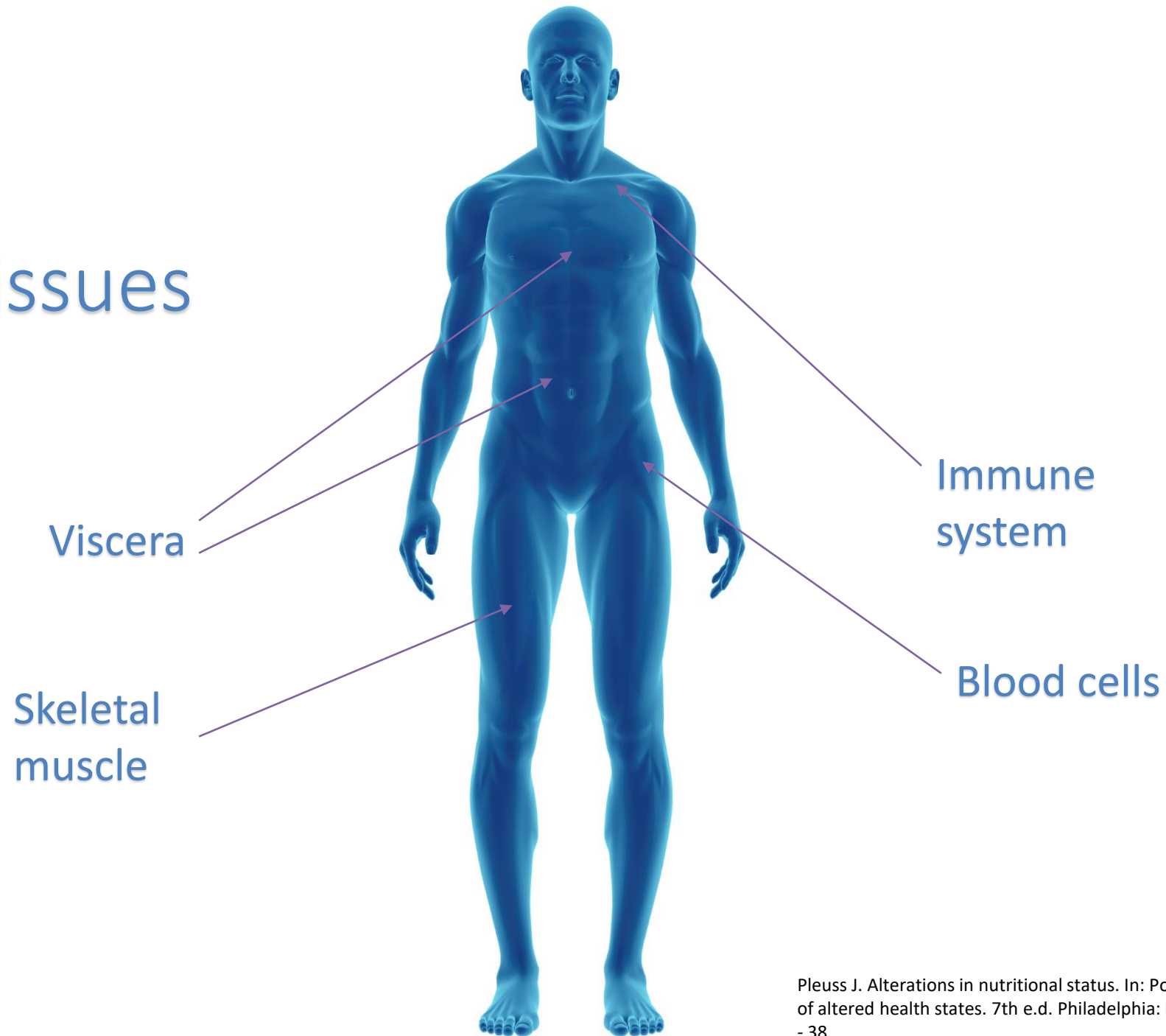
*All researchers declare no potential or actual conflicts of interest*

# A success story...



**Figure 1.1:** Global population pyramid in 2002 and 2025 indicating the triangular pyramid of 2002 will be replaced with a more cylinder-like shape in 2025.

# Lean tissues



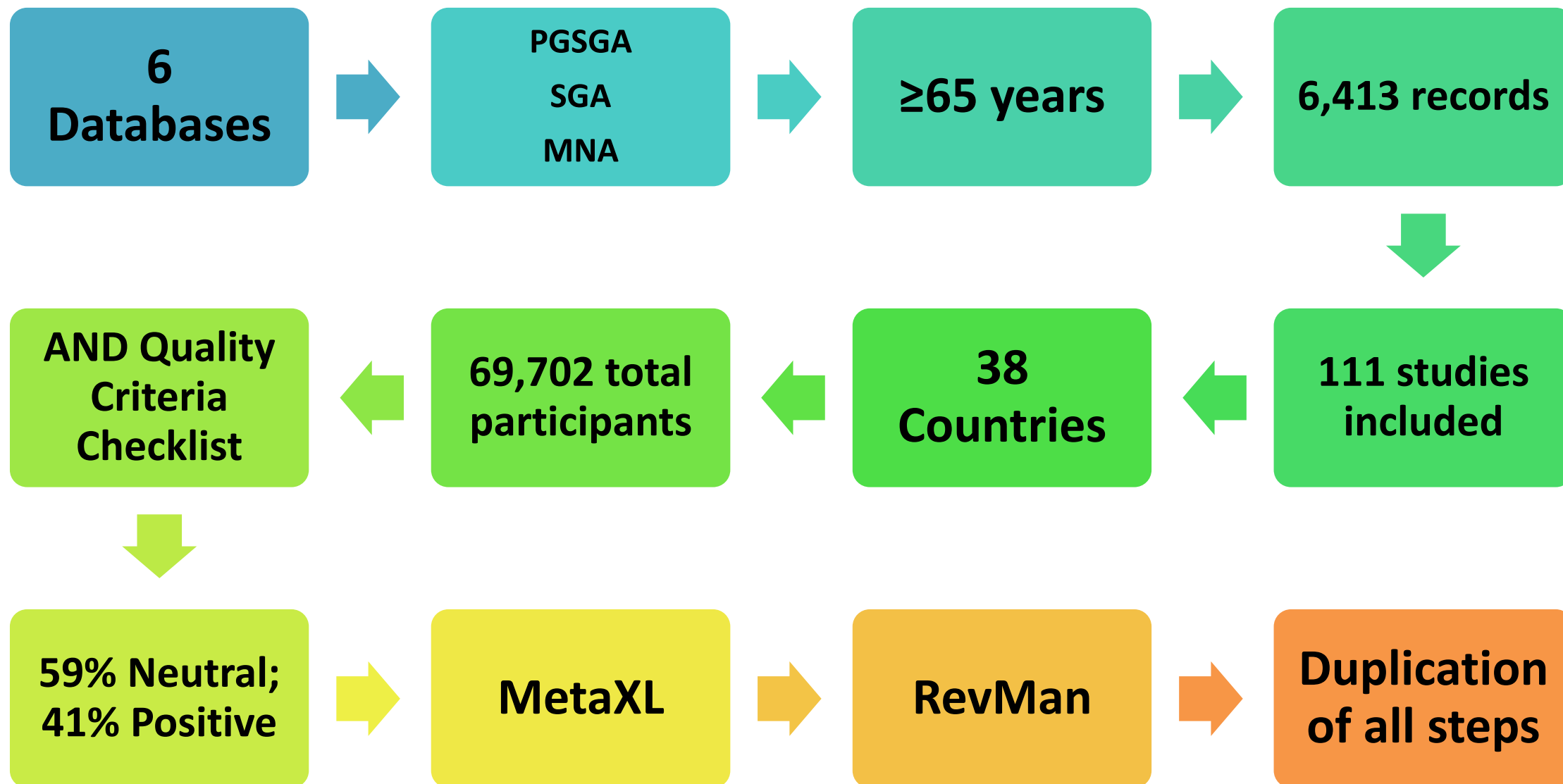
# Malnutrition prevalence??

- 2009 DAA Best Practice Guidelines:

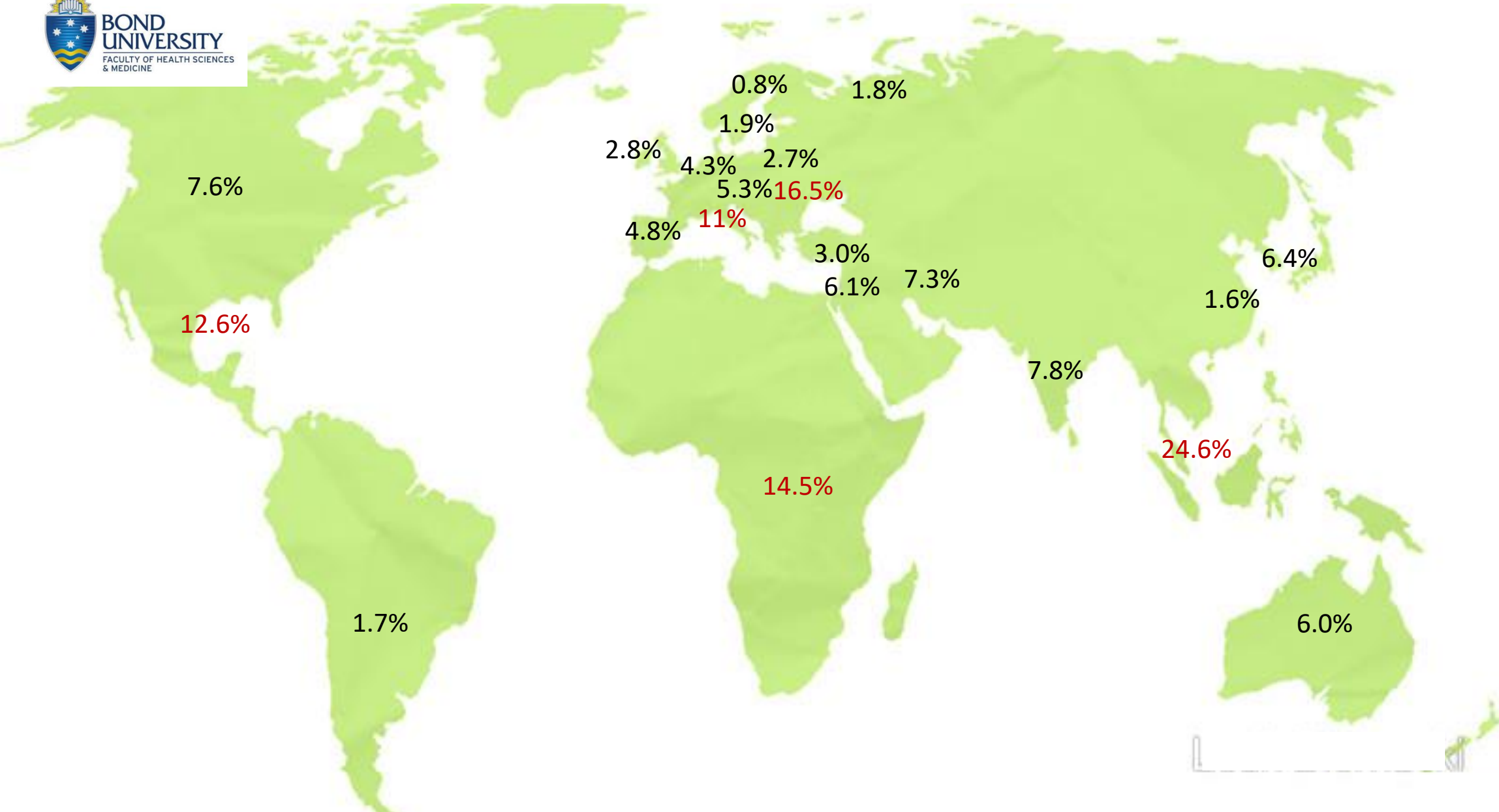
- Literature search concluded August 2006
- ? population
- ? Rural / metropolitan
- ? Method of diagnosis

Setting	Prevalence	Contributing studies
Acute care	20 – 50%	5 studies (3 Australian)
Rehabilitation	30-50%	5 studies (4 Australian)
Residential aged care	40 – 70%	3 studies (1 Australian)
Community	10 – 30%	3 studies (2 Australian)

# SLR Methods & Findings









### North America

Community (n=1,112) = **6.1%**

Home care (n=198) = **12.1%**

Hospital outpatient (n=0) = ?

Nationally representative (n=0) = ?

Post-hospital (n=0) = ?

Primary health (n=621) = **9.5%**

### South America

Community (n=1,908) = **2.1%**

Home care (n=0) = ?

Hospital outpatient (n=97) = **0%**

Nationally representative (n=0) = ?

Post-hospital (n=0) = ?

Primary health (n=0) = ?

### Europe

Community (n=31,001) = **2.8%**

Home care (n=2,025) = **11.2%**

Hospital outpatient (n=0) = ?

Nationally representative (n=3,071) = **3.3%**

Post-hospital (n=82) = **4.9%**

Primary health (n=2,867) = **5.7%**

### South America

Community (n=370) = **28.4%**

Home care (n=0) = ?

Hospital outpatient (n=500) = **7.8%**

Nationally representative (n=0) = ?

Post-hospital (n=0) = ?

Primary health (n=0) = ?

### Asia

Community (n=16,476) = **5.7%**

Home care (n=462) = **14.6%**

Hospital outpatient (n=1,304) = **10.2%**

Nationally representative (n=2,674) = **2.7%**

Post-hospital (n=0) = ?

Primary health (n=3,151) = **7.7%**

### Australia

Community (n=38) = **5.3%**

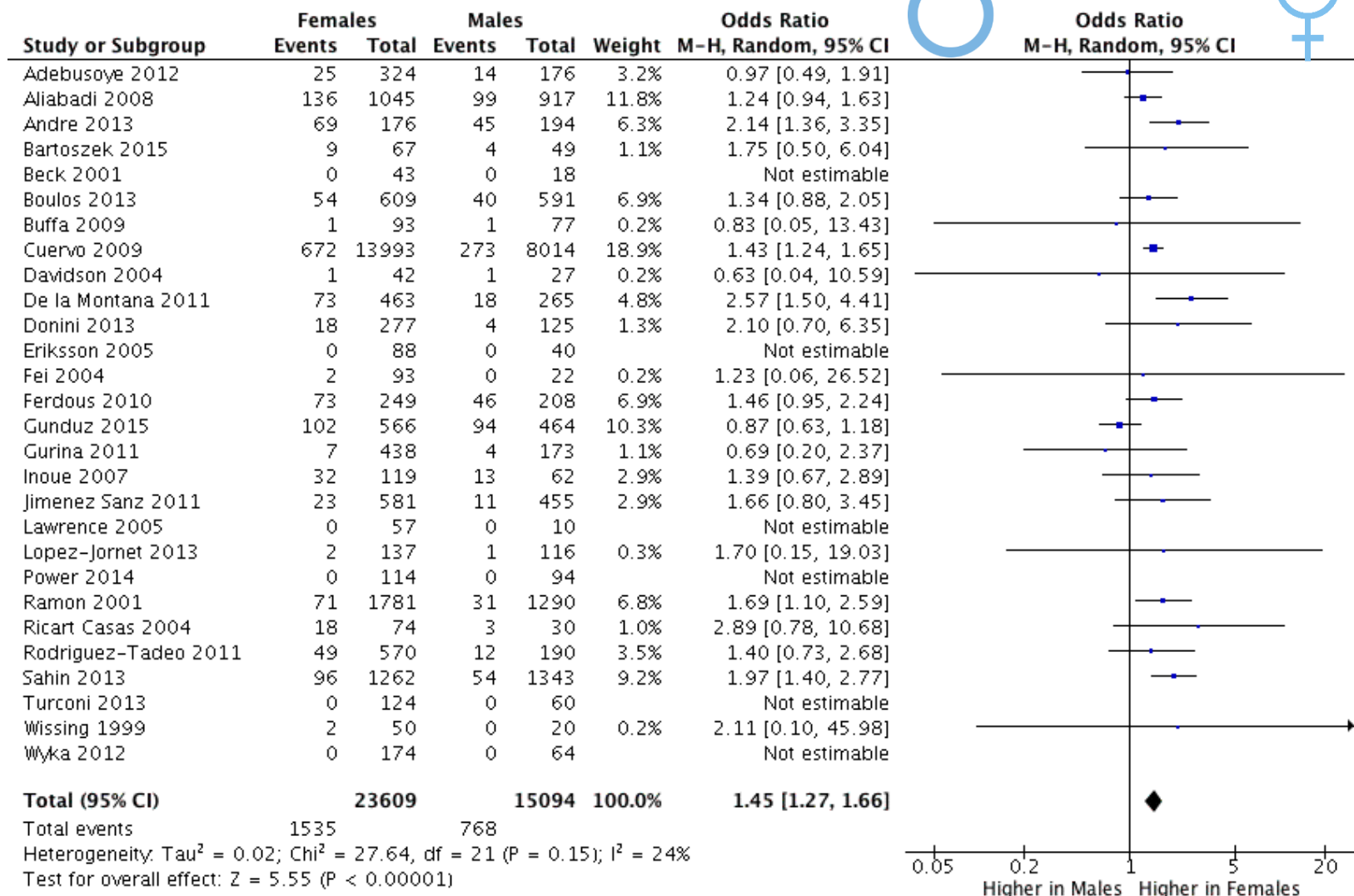
Home care (n=598) = **6.3%**

Hospital outpatient (n=0) = ?

Nationally representative (n=0) = ?

Post-hospital (n=223) = **4.9%**

Primary health (n=0) = ?



Protein-energy malnutrition prevalence was **higher among females** than males (**OR 1.45** [95% CI: 1.27 – 1.66];  $P < 0.00001$ ;  $n = 24$  studies;  $n = 38,703$  participants;  $I^2 = 24\%$ ).

## Urban

- 69 studies
- n=21,834 total participants



**5.7%**  
[95%CI: 4.2-  
7.3%]  
 $I^2=95.9\%$

## Rural

- 17 studies
- n=5,822 total participants

**9.9%**  
[95%CI: 4.5-  
16.8%]  
 $I^2=98.2\%$





# Take Away Message



- People, not numbers
- Prioritise research in North America, South America, Africa, Oceania
- Translate to public health policy, post-discharge support, community programs